CLAIMS

Amend the claims as follows.

1. (Currently Amended) In a digital wireless receiver, a method of detecting the presence of a data packet in a received radio frequency (RF) signal, the method comprising:

down-converting the received RF signal into in-phase (I) and quadrature (Q) baseband signals;

removing direct current (DC) offsets from the I and Q baseband signals;

modulating the I and Q baseband signals;

mapping the modulated I and Q baseband signals to a unit circle on a QPSK constellation;

comparing the mapped I and Q baseband signals to a reference signal via a complex correlator;

detecting a peak of ~~the~~ a complex correlator output; and

in response to the peak being above a predefined threshold, indicating that a data packet has been received.

2. (Canceled)

3. (Previously Presented) The method of claim 1, wherein said detecting comprises:

converting the complex correlator output from a complex value to a polar value;

calculating a signal magnitude of the polar value; and

determining whether a data packet containing information bits is present.

4. (Currently Amended) The method of claim 3, wherein said calculating is performed using ~~the formula~~ (mag)^2.

5. (Previously Presented) The method of claim 4, wherein said determining comprises employing a peak signal envelope detection technique.

6. (Previously Presented) The method of claim 4, wherein said determining comprises:

comparing the signal magnitude to a minimum threshold; and

indicating that a correct signature was received in response to the signal magnitude exceeding the minimum threshold.

7. (Currently Amended) In a digital wireless receiver, a circuit for detecting the presence of a data packet in a received radio frequency (RF) signal, the circuit comprising:

a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from the received RF signal; and

an acquisition module communicating with the DC offset module, wherein the acquisition module comprises:

a M-ary phase shift keying (PSK) mapper to map the corrected I and Q baseband signals to a quantized QPSK signal constellation;

a complex correlator to receive input from the M-ary PSK mapper and to compare the mapped I and Q baseband signals to a reference; and

a detector to receive input from the complex correlator and to determine ~~the~~ presence of a correct signature.

8. (Currently Amended) The circuit of claim 7, wherein the detector comprises:

a complex to polar (C2P) converter to convert ~~the~~ an output of the complex correlator into an amplitude and phase value;

a magnitude calculation module to determine a signal size of the converted output; and

a peak detection module communicating with the magnitude calculation module to determine ~~the~~ presence of information bits.

9 (Previously Presented) The circuit of claim 8, wherein the received RF signal comprises a quadrature amplitude modulated (QAM) signal.

10. (Canceled)

11. (Currently Amended) A method for detecting ~~the~~ presence of a data packet in a received quadrature amplitude modulated (QAM) radio frequency (RF) signal, the method comprising:

mapping the received QAM RF signal to a quantized phase shift keying (PSK) constellation by:

removing direct current (DC) offsets from I and Q baseband signals derived from the received QAM RF signal;

modulating the I and Q baseband signals; and

mapping the modulated I and Q baseband signals to a unit circle on a QPSK constellation; and

processing in a matched complex correlator to detect the presence of a data packet by:

comparing ~~the~~ an amplitude normalized I and Q baseband signals to a reference signal via a complex correlator;

detecting a peak of ~~the~~ a complex correlator output; and

if the peak is above a predefined threshold, indicating that a data packet has been received.

12. (Canceled)

13. (Previously Presented) The method of claim 11, wherein said detecting comprises:

converting the complex correlator output from a complex value to a polar value;

calculating a signal magnitude of the polar value; and

determining whether a data packet containing information bits is present.

14. (Previously Presented) The method of claim 13, wherein said determining comprises:

comparing the signal magnitude to a minimum threshold; and

indicating that a correct signature was received in response to the signal magnitude exceeding the minimum threshold.

15. (Currently Amended) In a digital wireless receiver, a circuit for detecting ~~the~~ presence of a data packet in a received radio frequency (RF) signal, the circuit comprising:

a direct current (DC) offset module configured to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from the received RF signal; ~~and~~

~~an acquisition module to receive the corrected I and Q baseband signals and to perform map, compare, and detect functions in relation thereto to determine a presence of information bits associated with the data packet~~

a M-ary phase shift keying (PSK) mapper configured to map the corrected I and Q baseband signals to a quantized QPSK signal constellation;

a complex correlator configured to compare the mapped I and Q baseband signals to a reference; and

a detector configured to determine a signature associated with the data packet in response to the comparison.

16. (Canceled)

17. (Currently Amended) The circuit of claim ~~16~~ 15, wherein the detector comprises:

a complex to polar (C2P) converter configured to convert ~~the~~ an output of the complex correlator into an amplitude and phase value;

a magnitude calculation module configured to determine a signal size of the converted output; and

a peak detection module communicating with the magnitude calculation module configured to determine ~~the~~ presence of ~~information bits~~ the signature.

18. (Previously Presented) The circuit of claim 17, wherein the received RF signal comprises a quadrature amplitude modulated (QAM) signal.

19. (Currently Amended) A quadrature amplitude modulated (QAM) receiver, comprising:

a direct current (DC) offset module to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from a received radio frequency (RF) signal;

an acquisition module communicating with the DC offset module, wherein the acquisition module comprises:

a M-ary phase shift keying (PSK) mapper to map the corrected I and Q baseband signals to a quantized QPSK signal constellation;

a complex correlator to receive input from the M-ary PSK mapper and to compare the mapped I and Q baseband signals to a reference; and

a detector to receive input from the complex correlator and to determine ~~the~~ presence of a correct signature.

20. (Currently Amended) The QAM receiver of claim 19, wherein the detector comprises:

a complex to polar (C2P) converter to convert ~~the~~ an output of the complex correlator into an amplitude and phase value;

a magnitude calculation module to determine a signal size of the converted output; and

a peak detection module communicating with the magnitude calculation module to determine ~~the~~ presence of information bits.

21. (Currently Amended) A quadrature amplitude modulated (QAM) receiver, comprising:

a direct current (DC) offset module configured to correct for local oscillator (LO) leakage in in-phase (I) and quadrature (Q) baseband signals derived from a received radio frequency (RF) signal; ~~and~~

~~an acquisition module to perform at least one of a map, compare, or detect functions on the corrected I and Q baseband signals to determine a the presence of information bits associated with a data packet~~

a M-ary phase shift keying (PSK) mapper configured to map the corrected I and Q baseband signals to a quantized QPSK signal constellation;

a complex correlator configured to compare the mapped I and Q baseband signals to a reference; and

a detector configured to determine a signature associated with a data packet in response to at least one of the M-ary PSK mapper or the complex correlator or a combination thereof.

22. (Canceled)

23. (Currently Amended) The QAM receiver of claim 21, wherein the detector comprises:

a complex to polar (C2P) converter configured to convert ~~the~~ an output of the complex correlator into an amplitude and phase value;

a magnitude calculation module configured to determine a signal size of the converted output; and

a peak detection module communicating with the magnitude calculation module configured to determine the signature ~~presence of information bits~~.